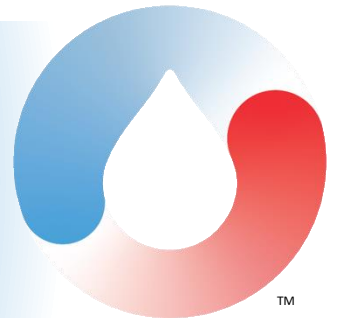


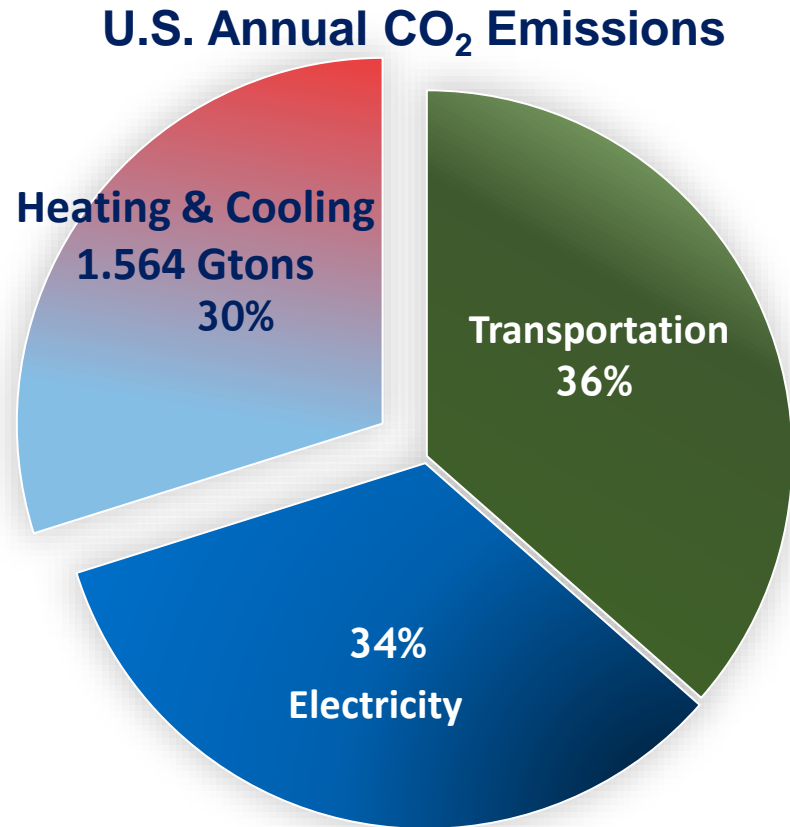
Minneapolis Community Environmental Advisory Commission

Darcy Solutions Overview

September 20, 2022



Heating and cooling is the next sector for carbon reduction



Sources: EIA, Monthly Energy Review, April 2019

- Geothermal represents the most energy efficient and environmentally friendly heating and cooling technology
- DOE recommends geothermal displace 50% of conventional HVAC
- Darcy makes geothermal viable for a large segment of the market *for the first time*

Developing Darcy's innovative heating & cooling solution

Our Team



Brian Larson
Co-founder
& CEO



Dr. Jimmy
Randolph,
PhD, Co-
Inventor



Scott Alexander,
Co-Inventor,
Chief Geologist



Dr. Suzanne
Magdalene,
PhD, Senior
Geologist



Alex Martell,
Business Ops
& Regulatory



Andrew
Steiner, Chief
Development
Officer

**We founded Darcy to
make a meaningful
impact on improving
the health of our
communities and planet**



Ryan Martin-Wagar,
Technology

Our Solution

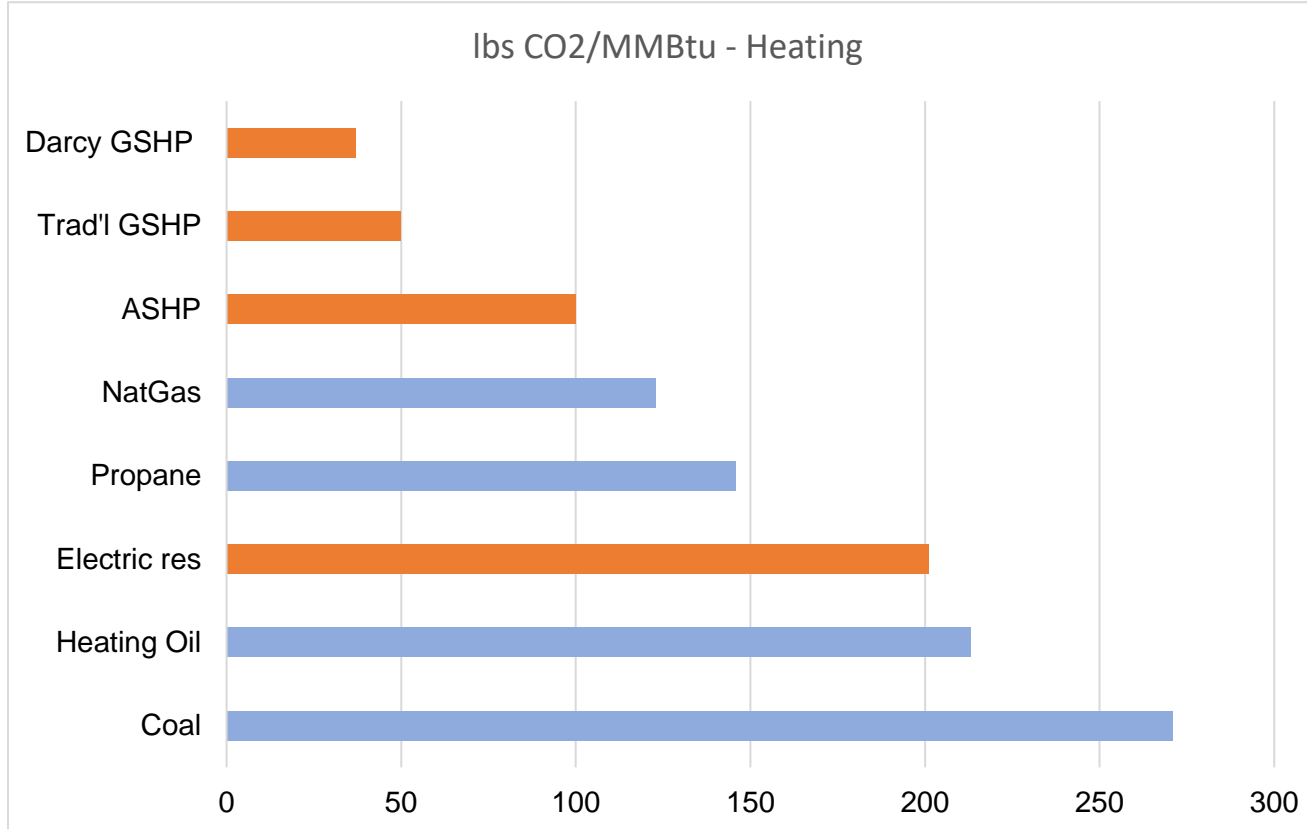


UNIVERSITY OF MINNESOTA
Driven to Discover®

- Darcy's **ground water enabled** system offers a fundamentally new approach, dramatically increasing per-well efficiency to drive down cost and space requirements
- Darcy delivers the most sustainable, energy-efficient heating and cooling system available **while protecting our natural resources**
- Particularly well-suited for dense, urban applications for commercial and multi-family residential
- Enables an energy transition to include communities too often left behind

With the highest efficiency, Darcy offers the greatest reduction in emissions

Heating Emissions Comparison



Note: Xcel MW - 12% natgas, 30% coal, 29% nuclear and 29% renewables


Sources: EIA, energysavers.gov, Energy.gov

With the greatest operating efficiency and lowest emissions profile, Darcy enables building owners to achieve:

- The most stringent energy efficiency regulations, such as SB2030
- Sustainability goals such as Net Zero Emissions
- Fully electric, non-hydrocarbon heating & cooling

While supporting utilities' efforts of strategic electrification

Darcy addresses the two biggest hurdles faced by traditional geothermal systems

| Features | Conventional HVAC | Traditional Geothermal | Air Source Heat Pumps | DARCY  |
|-------------------------|-------------------|------------------------|-----------------------|---|
| Installation cost | ✓ | ✗ | ✓ | ✓ |
| Operating cost | | ✓ | | ✓ |
| Zero emissions onsite | ✗ | ✓ | ✓ | ✓ |
| Energy efficient | | ✓ | | ✓ |
| Long system life | | ✓ | | ✓ |
| Small footprint | ✓ | ✗ | ✓ | ✓ |
| Cold climate heat | ✓ | ✓ | ✗ | ✓ |
| Heating or cooling only | | | | ✓ |

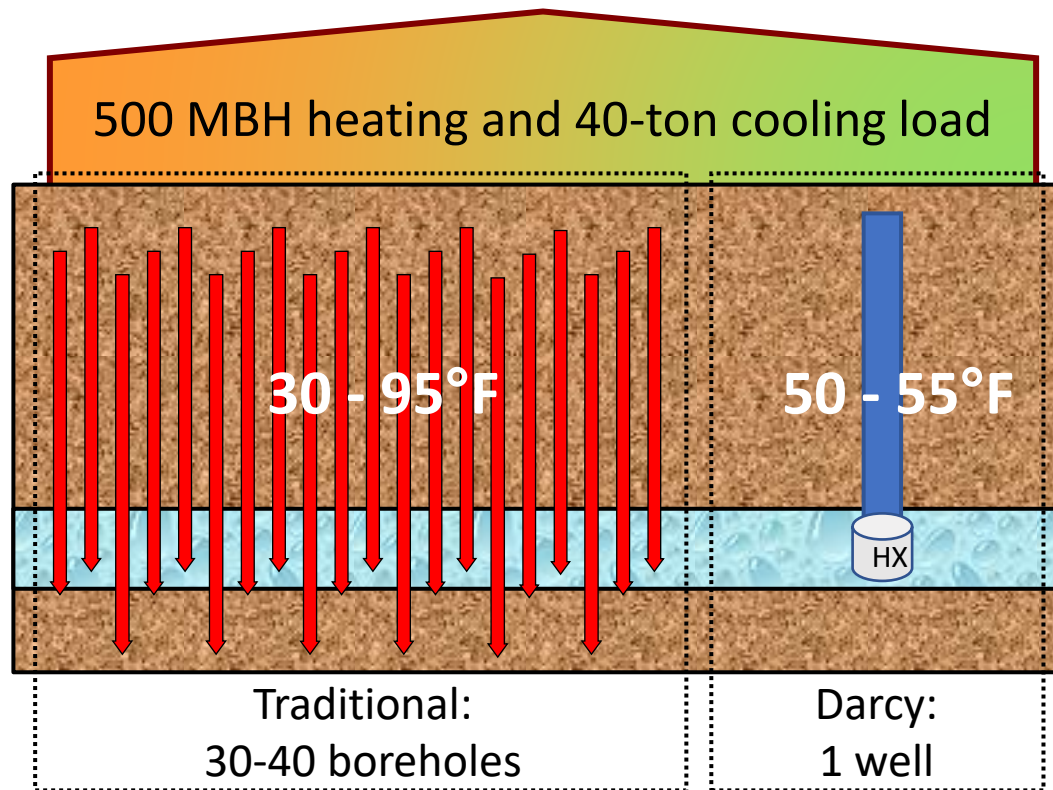
Darcy supports a Just Transition

- Due to pollution and climate change, low-income residents and people of color face disproportionate health risks, such as early-onset asthma and cardiovascular disease
- As natural gas utilities lose volume due to the electrification of everything, these same communities could be left with the high fixed costs of these gas networks
- These disproportionately affected communities should be able to transition to clean and healthy buildings **first**, *not* last
- Darcy enables this transition due to our ability to construct systems with **zero onsite emissions**, with the highest efficiency, in the urban environment



image sourced from Ben & Jerry's®

Darcy makes geothermal heating and cooling viable for building types that are largely unable to utilize geo today

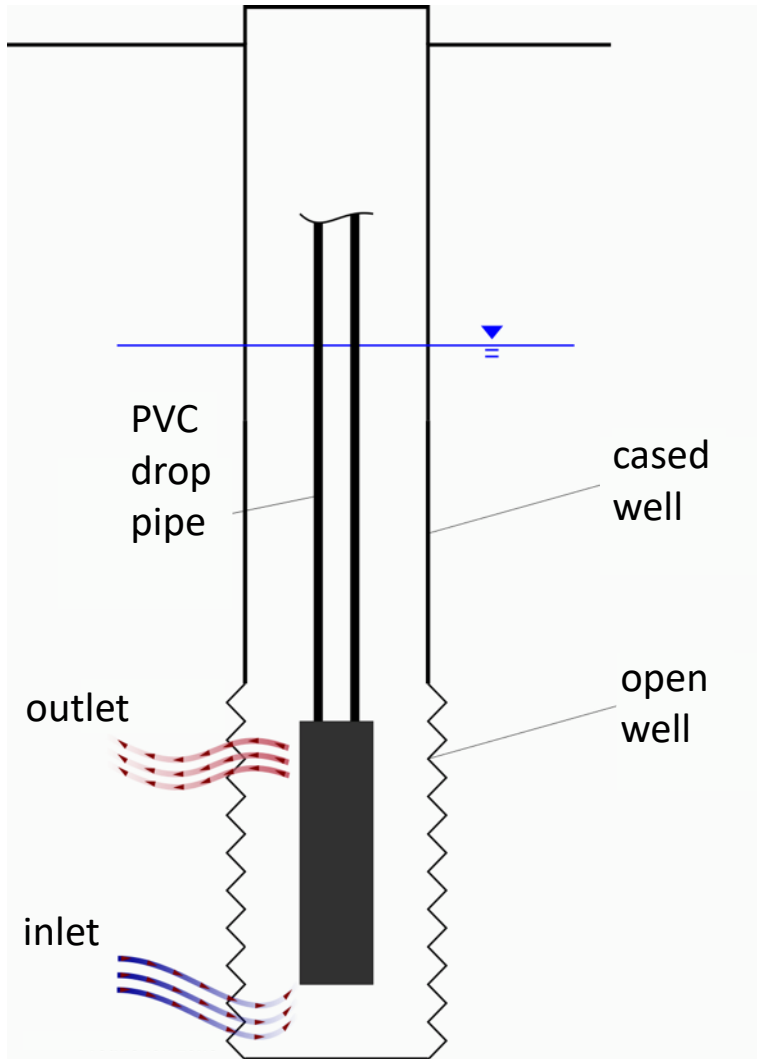


Darcy generates 50+ tons of heating/cooling capacity per well vs. 1-2 tons per borehole for traditional geothermal

Benefits:

- Expands the viability of geothermal, especially for building sites that are footprint constrained
- Reduces upfront installation and equipment sizing
- Minimizes site disruption and installation time
- Remains accessible for maintenance
- Accelerates project returns on investment

Darcy places its heat exchanger into a water well



The **Darcy system** is a closed loop system

- The well is a compliant water-supply well
- The building loop fluid is ***potable water***
- Ground water is drawn from and returned to the same source; it remains in the ground
- Unlike commonly used chillers, Darcy utilizes essentially zero water
- The system is constructed with materials and equipment that are recognized as safe and currently used in domestic wells

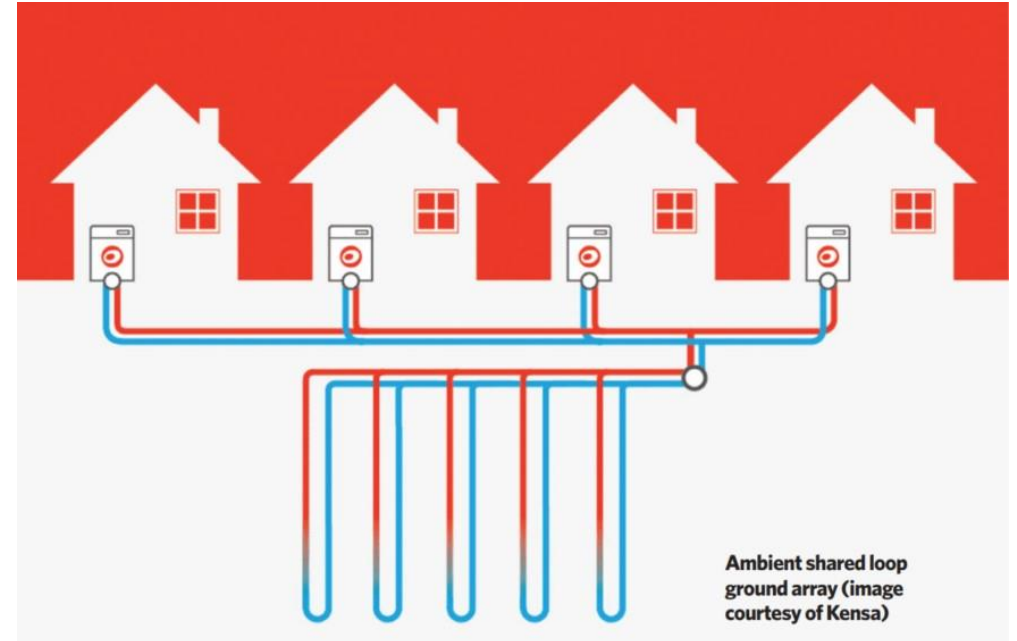


Applications & Markets

- Commercial, multi-family, and industrial
- Community and district residential systems
- Project sizes: 50 tons - 1,000+ tons
- Project types: new construction and retrofit
- HVAC system: new or integrate into existing
- Site characteristics: urban to rural

Thermal Networks – District Systems

- NY state passed a bill in July enabling the traditional gas utilities to transition their business model to thermal networks for delivering climate-friendly and clean heating and cooling as an alternative to delivering natural gas or heating oil
- Through legislation, Minnesota could offer the same transition to our utilities operating in dense environments
- Pilot programs could soon demonstrate the potential value of district geothermal systems in Minneapolis neighborhoods

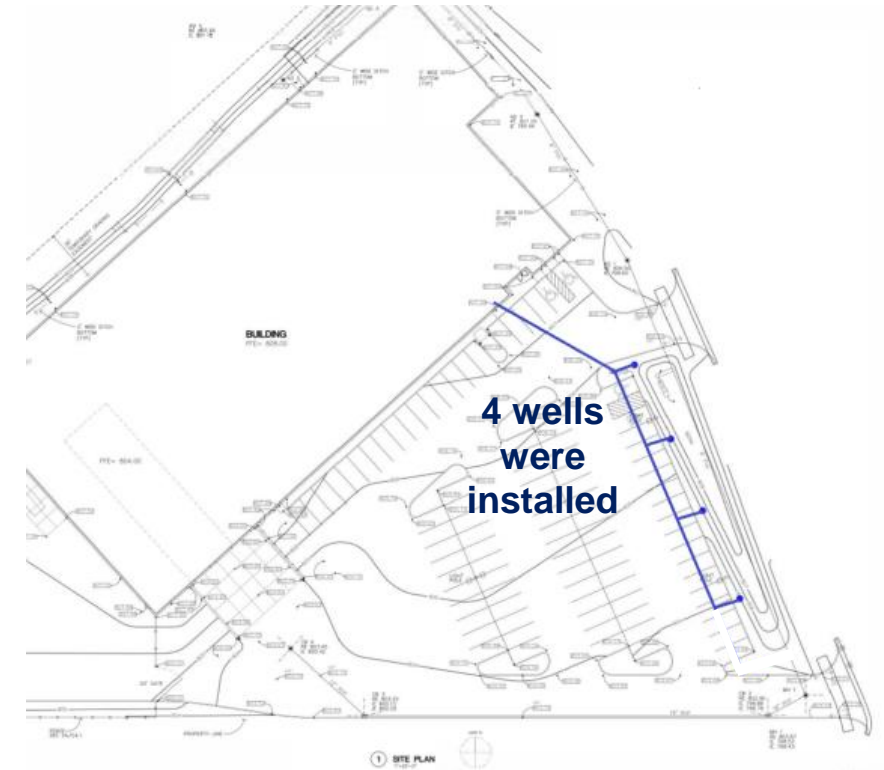


Case Study

Case study: St. Paul mixed office and warehouse

Traditional geothermal

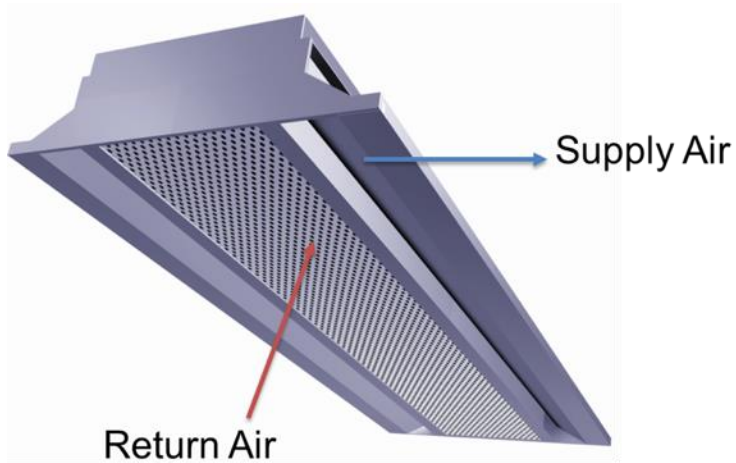
- Would tear up the entire parking lot to drill 75+ boreholes
- Maintenance and repairs require extensive parking lot disruption
- Replacing the lot is disruptive, costly, and environmentally harmful



Darcy reduces footprint and disruption

- Impacts limited to the edge of the parking lot
- System is easily accessible for maintenance and capacity expansion
- Site and business disruption are minimized

Case study: St. Paul mixed office and warehouse



Induction Displacement Chilled Beams

78% reduction in cooling-related energy use and emissions from code-standard system...almost free cooling!

Roof Reutilization

- Rooftop air conditioning and air handler units were reduced from 28 to just 4 – freeing up roof space for future solar installation
- Currently developing the design for thermal solar installation





Darcy Delivers

- A practical and financially attractive option for heating and cooling that is a breakthrough for low-carbon systems *in the urban environment*
- An enabling solution to support a *just transition*
- The *most efficient* system for heating and cooling – both upfront and long-term
- Safe and essentially zero utilization of groundwater